ABSTRACT

THE EFFECT OF ORAL ADMINISTRATION OF QUERCETIN – MALONIC ACID COCRYSTAL IN RABBITS ON THE BIOAVAILABILITY OF QUERCETIN

Nikhita Uliana Ramadan

Quercetin is a class 2 candidate of the *Biopharmaceutics Classification System* (BCS), meaning it has a high cellular permeability and low solubility. Therefore, a modification in the formulation of quercetin is needed to increase its bioavailability. This research aims to modify the formulation of quercetin with co-crystalization by adding malonic acid as coformer in order to enhance quercetin's solubility. The plasma concentration of quercetin was measured with high performance liquid chromatography (HPLC) method. The parameters of bioavailability measured were T_{max}, C_{max}, and $AUC_{0\text{-}480mnt}$. The results obtained were the average values of these pharmacokinetic parameters. The average T_{max} of195 ±174.93 minutes, the average C_{max} of 0,56 ± 0,11µg/mL, and the average $AUC_{0\text{-}480}$ of 435.62 ± 137.71 µg.minute/mL were obtained from the single quercetin compound. After the addition of the coformer malonic acid, the average values altered to the average T_{max} of 167.50 ± 172.97 minutes, the average C_{max} of 0.71 ± 0.38 µg/mL, and the average $AUC_{0\text{-}480}$ of 415.65± 159.01µg.minute/mL. Therefore, it can be concluded that the co-crystal quercetin - malonic acid does not increase the bioavailability of quercetin significantly compared to its single compound according to the average values of T_{max}, C_{max}, and $AUC_{0\text{-}480}$.

Keywords:quercetin, cocrystal, malonic acid, HPLC, bioavailability